

WHAT IS CLAIMED IS:

1. An optical transmission module comprising:

a light emitting element;

an optical fiber;

5 a first lens for collimating light from the light emitting element; and

a second lens for focusing said collimated light to said optical fiber;

wherein when a focal length of said first lens is designated
10 by a notation f_1 and a focal length of said second lens is designated by a notation f_2 , said first lens and said second lens are arranged such that an optical distance d between a principal plane of a side of said first lens proximate to said second lens and a principal plane of a side of said second lens proximate to said first lens satisfies $|d - (f_1 + f_2)| \leq 5 \times f_1$.

2. An optical transmission module comprising:

a light emitting element;

an optical fiber;

15 a first lens for collimating light from said light emitting element; and

a second lens for focusing said collimated light to said optical fiber;

wherein when a focal length of said first lens is designated
by a notation f_1 and a focal length of said second lens is
25 designated by a notation f_2 , said first lens and said second

lens are arranged such that a principal plane of a side of said first lens proximate to said second lens and a principal plane of a side of said second lens proximate to said first lens substantially equals to $f_1 + f_2$.

5 3. The optical transmission module according to Claim 2, wherein said first lens and said second lens are arranged such that said optical distance d satisfies $|d - (f_1 + f_2)| \leq 2 \times f_1$.

10 4. The optical transmission module according to Claim 1, wherein said first lens and said second lens are arranged such that a relationship between said focal length f_1 of said first lens and said focal length f_2 of said second lens becomes $f_2/f_1 \geq 5$.

15 5. The optical transmission module according to Claim 2, wherein said first lens and said second lens are arranged such that a relationship between said focal length f_1 of said first lens and said focal length f_2 of said second lens becomes $f_2/f_1 \geq 5$.

20 6. The optical transmission module according to Claim 1, wherein said first lens has a structure adjusted by a passive alignment system.

 7. The optical transmission module according to Claim 2, wherein said first lens has a structure adjusted by a passive alignment system.

25 8. The optical transmission module according to Claim 1,

wherein said first lens is mounted on a groove formed on a silicon board.

9. The optical transmission module according to Claim 2,
wherein said first lens is mounted on a groove formed on
5 a silicon board.

10. The optical transmission module according to Claim
1,

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10 wherein an isolator for restraining incidence of reflected
return light to said light emitting element is arranged at either
of between optical axes of said first lens and said second lens
and between optical axes of said second lens and said optical
fiber.

11. The optical transmission module according to Claim
1,

15 wherein an isolator for restraining incidence of reflected
return light to said light emitting element is arranged at either
of between optical axes of said first lens and said second lens
and between optical axes of said second lens and said optical
fiber.

20 12. The optical transmission module according to Claim
1,

wherein said light emitting element is a laser having an
output equal to or smaller than 10 mW (10 dBm).

25 13. The optical transmission module according to Claim
2,

wherein said light emitting element is a laser having an output equal to or smaller than 10 mW (10 dBm).

14. The optical transmission module according to Claim 12,

5 wherein said optical module is connected to an optical fiber network having a transmission capacitance of 2.5 Gbit/s and a transmission distance equal to or larger than 15 km, or a transmission capacitance equal to or larger than 10 Gbit/s and a transmission distance equal to or larger than 2 km.

10 15. The optical transmission module according to Claim 13,

15 wherein said optical module is connected to an optical fiber network having a transmission capacitance of 2.5 Gbit/s and a transmission distance equal to or larger than 15 km, or a transmission capacitance equal to or larger than 10 Gbit/s and a transmission distance equal to or larger than 2 km.

16. The optical transmission module according to Claim 12,

20 wherein said optical module is connected to an optical fiber network having a transmission capacitance equal to or larger than 10 Gbit/s and a transmission distance equal to or smaller than 2 km.

17. The optical transmission module according to Claim 13,

25 wherein said optical module is connected to an optical

fiber network having a transmission capacitance equal to or larger than 10 Gbit/s and a transmission distance equal to or smaller than 2 km.

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